JSA NUMBER: JSA-030 **Revision No:** **ORIGINAL:** 10/24/07 **REVISION:** 10/31/07	**Company Performing the Job:** Brown and Caldwell	**PROJECT MANAGER:** Chuck Zimmerman **SAFETY OFFICER:** Penny Bassett
JOB TITLE OR TASK: Quarterly Monitoring Well Sampling-Low Flow Method	**TITLE OF PERSON(S) WHO PERFORMS JOB:** Site Manager: TBD Site Technicians: TBD	**ANALYSIS BY:** **REVIEWED BY:** Penny Bassett

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE) AND/OR PERTINENT JOB SAFETY FORMS:

Minimum PPE: Hard hat, safety glasses, steel-toed boots, long-sleeved shirt, high visibility vest.
Additional PPE (as needed): Leather gloves, nitrile gloves
Monitoring Equipment: YSI multi parameter probe, water level indicator, Turbidity meter
Job Safety Form: BP Authorization to Work, Tailgate Meeting Record

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
1. Gather field supplies	1. Bodily strain or injury 2. Transport of pressurized gas cylinder	1. Use proper lifting techniques. Get assistance when possible, especially for containers heavier then 50 lbs. 2. Handle cylinders carefully. Do not allow cylinders to roll around during transportation. Always transport with cap in place and strapped vertically in a carrier.
2. Calibration of monitoring equipment a. Pour calibration solution into clean cup. b. Place probe in solution until parameters are stable. c. Adjust monitor as required.	1. Skin or eye contact with calibration chemicals	1. Wear disposable gloves and safety glasses, avoid direct contact with calibration solutions. 2. Properly dispose of calibration solution wastes.
3. Drive to sample locations	1. Driving injury resulting from rough terrain or road hazards.	1. May require driving on dirt roads. Pay attention to road conditions such as road erosion, unprotected embankments, soft road surfaces. 2. Weather conditions may affect activities by restricting access to unmaintained roadways. Scout the area on foot if uncertain about road conditions. 3. Do not talk on the cell phone while driving. 4. Be aware of your surroundings when exiting the vehicle. Be cognizant of rattles and other wild animal warning sounds.
4. Open well cap a. check water level-lower water level indicator into well	1. Insects inside well monument 2. Splinters, burrs, sharp edges on water level tape	1. Wear leather gloves
5. Set up and installation of low-flow pump (If installation required) a. Connect low-flow pump to sampling tube and security cable if using portable pump and lower into well. If using dedicated pump follow steps to connect pump to controller. b. Connect sampling tube to pump controller and flow cell. c. Set up CO2 or nitrogen gas cylinder d. Connect regulator to cylinder e. Connect pump controller to pressurized gas cylinder (nitrogen or CO2) or air compressor with appropriate pressure regulator. f. Open regulator valve and adjust pump controller to achieve desired flow rate	1. If installed by hand, potential hand injuries 2. Physical hazards associated with manual lifting and carrying of gas cylinders or other heavy equipment. 3. Unexpected release of pressure form gas cylinder or air compressor.	1. Two people should assist each other at the well when lowering and pulling the pump, wear leather gloves. 2. Lift heavy objects using the legs and not the back. Use wheeled transport equipment for heavy loads. Get assistance when handling loads greater than 50 lbs. 3. Cylinder must be secured in a stable vertical position before pressure regulator is attached. Remove regulator and replace cap when transporting cylinders. Check for damaged air lines and replace if compromised.
6.Sample collection a. Purge well, and if required, collect purge water in 250 gal poly tank b. Monitor gw level & drawdown using water level meter	1. Contact with potentially contaminated groundwater 2. Contact with and burns from acids used for sample preservation	1. Wear disposable gloves and safety glasses when collecting sample to minimize contact with groundwater. 2. Wear disposable gloves and safety glasses when handling acids. Quantities handled are generally very small, so large spills are unlikely.

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c. Monitor water parameters until stabilized. d. Prepare sample bottles with preservatives and labels. e. Collect water sample from discharge tubing into sample bottles. f. Securely cap containers and store in sample cooler until shipping.	3. Tripping potential on air/sample discharge line. 4. Back strain when transporting coolers full of collected samples.	In event of contact with acid, wash area thoroughly with fresh water. 3. Organize line to keep out of way as much as possible, mark potential tripping hazards with caution tape or safety cones. 4. Use proper lifting techniques. Get assistance when possible, especially for containers heavier then 50 lbs.
7. Site Cleanup a. Turn off pump b. Close valve on regulator c. Slowly loosen fitting on gas connection to release any remaining pressure d. Remove regulator and place cap on cylinder e. Put cylinder back in vehicle	1. Contact with potentially contaminated groundwater 2. Heavy lifting 3. Pressurized cylinder, release of gas	1. Wear disposable gloves and safety glasses when collecting sample to minimize contact with groundwater 2. Use proper lifting techniques. Get assistance when possible, especially for containers heavier then 50 lbs. 3. Unloosen caps, fittings , regulators slowly
8. Sample shipping a. Place samples in shipping cooler, ensuring containers are protected from breakage. b. Place bagged ice in cooler if required. c. Place chain of custody or other shipping papers in cooler. d. Seal cooler with packing tape and label for shipment. e. Deliver to shipping outlet or lab or request pick-up.	1. Back strain when transporting coolers full of collected samples.	1. Use proper lifting techniques. Get assistance when possible, especially for containers heavier then 50 lbs.
9. All Activities	1. Slips, Trips, and Falls 2. Hand injuries during manual handling of materials. 3. Foot injuries 4. Back injuries	1. All personnel should be constantly watching for trip hazards such as uneven terrain, holes, ditches, stretched wires or ropes, or any other materials or pieces of equipment in their path. 2. Significant below-grade hazards (e.g., holes or trenches) should be marked with flagging, fencing or other appropriate means to make the obstacle easily identifiable. 3. Footwear appropriate for the terrain and work to be performed must be worn. 4. Muddy, snowy, and icy conditions will warrant a more cautious work attitude. Employees should change work speed and style to fit the weather conditions. 5. Workers should inspect materials for slivers, jagged or sharp edges, and rough or slippery surfaces. 6. Workers should keep fingers away from pinch and shear points, especially when setting down materials. 7. Workers should wipe off greasy, wet, slippery, or dirty objects before attempting to handle them. 4. In most cases, gloves or other protection should be used to prevent hand injuries. 5. Steel-toed bots should be used for protection of the feet. 6. All three main factors in manual lifting (load location, task repetition, and load weight) must be considered when evaluating what is safe or unsafe to lift. 7. All manual handling of heavy or bulky objects should be carefully planned to avoid injuries and damage to equipment.

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